

**WHAT IS CLAIMED IS:**

1. A light source device, comprising:

a light-emitting tube including a light-emitting portion that generates a light beam by an electric discharge between electrodes, and sealing portions provided on both sides of the light-emitting portion; and

a reflector including a neck portion provided with an insertion hole to which the light-emitting tube is inserted, and a reflecting portion integrally formed with the neck portion and having an ellipsoidal curved reflecting surface that irradiates the light beam emitted by the light-emitting portion after aligning in a predetermined direction,

wherein the light-emitting tube has a sub-reflection mirror that covers substantially front half of the light-emitting portion,

wherein the reflector has a step formed between the peripheral edge of an opening end of the insertion hole near the reflecting surface and the reflecting surface,

wherein the external diameter of the step is larger than the external diameter of the sub-reflection mirror while the external diameter of the step is within the diameter of a valid reflection area of the reflector, the diameter being defined by a focal position on the front side of the reflector and the outer periphery of the sub-reflection mirror, and

wherein the step has a part where the reflecting surface is not deposited on the border with the valid reflection area.

2. The light source device according to claim 1,

wherein the step is formed as a recess by cutting the part between the reflecting surface and the inner periphery of the insertion hole to have an L-shaped cross-section, and

wherein a lateral side of the step adjacent to the reflecting surface is the part where the reflecting surface is not deposited.

3. A projector comprising:

a light source device;

an optical modulator that modulates a light beam irradiated by the light source device in accordance with image information to form an optical image; and

a projection optical device that projects the optical image formed by the optical modulator in an enlarged manner,

5            wherein the light source device comprises:

             a light-emitting tube including a light-emitting portion that generates a light beam by an electric discharge between electrodes, and sealing portions provided on both sides of the light-emitting portion; and

             a reflector including a neck portion provided with an insertion  
10    hole to which the light-emitting tube is inserted, and a reflecting portion integrally formed with the neck portion and having an ellipsoidal curved reflecting surface that irradiates the light beam emitted by the light-emitting portion after aligning in a predetermined direction,

             wherein the light-emitting tube has a sub-reflection mirror that covers  
15    substantially front half of the light-emitting portion,

             wherein the reflector has a step formed between the peripheral edge of an opening end of the insertion hole near the reflecting surface and the reflecting surface,

             wherein the external diameter of the step is larger than the external diameter of the sub-reflection mirror while the external diameter of the step is within the  
20    diameter of a valid reflection area of the reflector, the diameter being defined by a focal position on the front side of the reflector and the outer periphery of the sub-reflection mirror, and

             wherein the step has a part where the reflecting surface is not deposited on the border with the valid reflection area.